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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/589,881	06/09/2000	Jeongmin Moon	3430-0105P	1734

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EXAMINER	
NGUYEN, HOAN C	

ART UNIT	PAPER NUMBER
2871	

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06/11/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/589,881	MOON, JEONGMIN	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/23/12*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1,2,6-11,14-18,21 and 24-27* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,2,6-11,14-18,21 and 24-27* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to claims 1, 10, 11 and 21 based on the Response filed on 05/23/2012 have been considered but are moot in view of the new ground(s) of rejection. Therefore, this is Final action.

The applicants argue that "If Miyashita's diffusing plate were used with a reflective type liquid crystal display device, it would degrade images displayed on Miyashita's liquid crystal display device", where does this conclusion state in Miyashita? However, the invention is not about a reflective-type liquid crystal display device.

Claim Rejections - 35 USC § 112

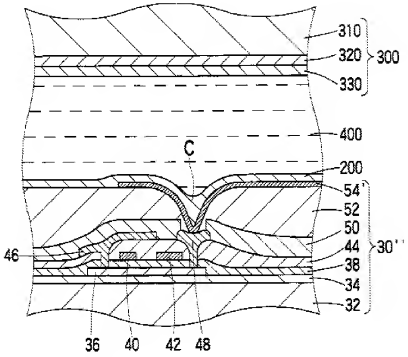
The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2, 7-9, 11, 14, 16-18, 21, 24-25, 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In preamble of claims, does "a reflective liquid crystal display device" mean "a reflective-type liquid crystal display device" or "a liquid crystal display device" with reflection layer placed outside the liquid crystal panel or cell?

Examiner would like to remind the applicants that "a reflective-type liquid crystal display device" conventionally comprises the reflective pixel electrode and does not requires the reflection layer outside as example [of Kemmochi et al. (US 6136624 A)]:



As the invention, “a reflective liquid crystal display device” in preamble of claims is not “a reflective- type liquid crystal display device” in the conventional sense. The feature of “a reflective type liquid crystal display device” in preamble of claims means the liquid crystal display device with the reflective layer under light guide, which is outside the liquid crystal panel or cell as shown in Figs. 1 and 4.

The feature “a reflective type liquid crystal display device” appears in claim preamble only, the clear description of “a reflective-type liquid crystal display device” is not in the claim languages and the specification. Why does “a reflective-type liquid crystal display device” as the argument requires the reflective layer under light guide?

Therefore, “a reflective liquid crystal display device” considers as the liquid crystal display device with the reflective layer under light guide, does not considers as “a reflective type liquid crystal display device” as the argument in REMARKS.

The independent claims 1, 10, 11 and 21 amended with feature "a ratio of the height to width of the convex portions is substantially about 1 to 2. Miyashita et al. (US 6011602) also disclose "the height j is larger than the width i" in col. 15 lines 6-7 and "Although the ratio of the width i to the height j is preferably i/j=1, ***the ratio may be i/j<1 (means j/i>1) to equalize the spacing between the projections***" in col. 15 lines 47-49; therefore, the ratio of the height to width j/i> 1 of the convex portions is substantially about 1 to 2 or covers the range 1 to 2].

Claim Rejections - 35 USC § 102

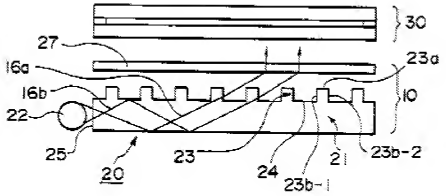
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-2, 7-9, 11, 14, 16-18, 21, 24-25, 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyashita et al. (US 6011602).

One of ordinary skill in the art would know that the upside down of the light guide will give the same physical properties such as uniform light distribution and view angle.

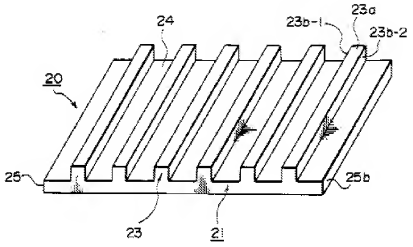
FIG. 1



In regard to claims 1 and 2, Miyashita et al. disclose an auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

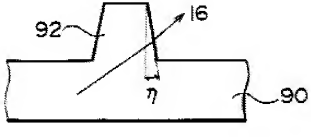
- a light source 22; and
- a light directing member (light guide 20), the upside-down light guide inherently gives the same property) for directing incident light from the light source toward the reflector outwardly along an orthogonal direction,
- the light directing member including:
    - an upper surface (e.g. 132c in Fig. 12) and a lower surface (the light-output-side surface 24) parallel to each other,
    - the lower surface having a plurality of convex portions 53 extending from the lower surface,

FIG. 2



- each of the convex portions having a substantially planar surface which is substantially parallel to the lower surface and a side surface (side surfaces 23b-1 and 23b-2) connecting the planar surface (a top surface 23a) and the lower surface (the light-output-side surface 24), and a side surface angle η (Fig. 10A) between the lower surface and the side surface of the convex portion and a line perpendicular to the substantially planar surface is about 90°less than 10 degrees that is less than 5 ° (col. 15 lines 58-60)

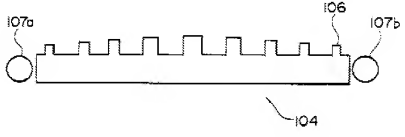
FIG. 10A



wherein

- the plurality of convex portions have the same side surface angle with each other, wherein light reflected along an orthogonal direction to the liquid crystal display device 30 is uniform, and
- a size of the plurality of convex portions increases with increasing distance from the light source as shown in Fig. 11B.

FIG. 11B

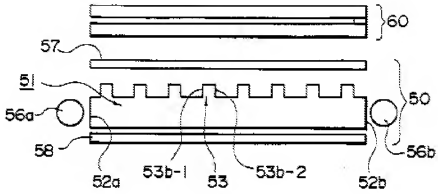


- a ratio of the height to width of the convex portions is substantially about 1 to 2 [***"the height j is larger than the width i" in col. 15 lines 6-7; "Although the ratio of the width i to the height j is preferably i/j=1, the ratio may be i/j<1 (means j/i>1) to equalize the spacing between the projections" in col. 15 lines 47-49; therefore, the ratio of the height to width j/i> 1 of the convex portions is substantially about 1 to 2 or covers the range of 1 to 2***].

Claim 2:

- a light reflecting member 58 to guide light from the light source 56/a/b into the light directing member 51 as shown in Fig. 5.

FIG. 5



In regard to claims 11 and 14, Miyashita et al. disclose an auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

- an upper reflective surface to reflect impinging light above a certain incidence angle;
- a lower reflective surface (the light-output-side surface 24) parallel to the upper reflective surface, the lower reflective surface having a plurality of convex portions extending toward the reflector to direct light from the auxiliary light source device to the reflector outwardly along an orthogonal direction; and
- an entry surface (the light input surface 25) connecting the upper and lower reflective surfaces through which light from a light source enters,

wherein

- each convex portion includes a planar portion which is substantially parallel to the lower reflective surface and side surfaces connecting the planar portion with

the lower reflective surface, and a side surface angle between the lower surface and the side surfaces and a line perpendicular to the planar surface is less than 5°is about 90° (col. 15 lines 58-60),

- the plurality of convex portions have the same side surface angle with each other,
- light reflected along an orthogonal direction to the liquid crystal display device isuniform, and
- a size of the plurality of convex portions increases with increasing distance from the light source as shown in Fig. 11B.
- a ratio of the height to width of the convex portions is substantially about 1 to 2 [[***"the height j is larger than the width i" in col. 15 lines 6-7; "Although the ratio of the width i to the height j is preferably i/j=1, the ratio may be i/j<1 (means j/i>1) to equalize the spacing between the projections" in col. 15 lines 47-49; therefore, the ratio of the height to width j/i> 1 of the convex portions is substantially about 1 to 2 or covers the range of 1 to 2***].

Claim 14:

- the planar portion is substantially parallel to the lower reflective surface.

wherein

Claims 7 and 16:

- the planar surface of each convex portion has a rectangular shape.

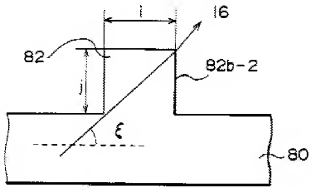
Claims 8 and 17:

- the plane surface of the plurality of convex portions has a bar shape extending perpendicular to a direction of light propagation in the light directing member.

Claim 9:

- a distance (height J) between the lower surface and the planar surface of the each convex portion is less than 50μm (Fig. 8, col. 15 lines 25-28).

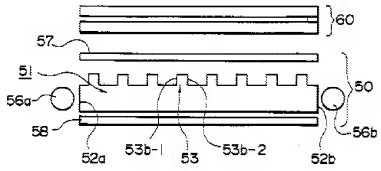
FIG. 8



Claim 18:

- the plurality of convex portions are spaced along the lower surface to ensure a uniform distribution of light along a length of the device.

FIG. 5



in regard to claims 21 and 24, Miyashita et al. disclose (Fig. 5) auxiliary light source device for a reflective liquid crystal display device having a reflector, the auxiliary light source device comprising:

- a light source 56a/b extending along a width of the reflector, to emit light along a length of the reflector (mirror sheet 58); and
- a light directing device 51 located above the reflector and adjacent to the light source to direct light from the light source to the reflector outwardly along an orthogonal direction such that a light distribution of light directed by the light directing device is substantially uniform along the length of the reflector, and such that the directed light is substantially perpendicular to the reflector, and
- the light directing device includes an upper surface, a lower surface parallel to the upper surface and a plurality of portions each extending from the lower surface toward the reflector at a 90° angle with respect to the lower or upper surface such that the light reflected outwardly along an orthogonal direction to the liquid crystal display device is uniform,

wherein

- each portion includes a planar surface which is substantially parallel to the lower surface, and
- a size of the plurality of portions increases with increasing distance from the light source.
- a ratio of the height to width of the convex portions is substantially about 1 to 2 [[***"the height j is larger than the width i" in col. 15 lines 6-7; "Although the***

ratio of the width i to the height j is preferably i/j=1, the ratio may be i/j<1 (means j/i>1) to equalize the spacing between the projections" in col. 15 lines 47-49; therefore, the ratio of the height to width j/i> 1 of the convex portions is substantially about 1 to 2 or covers the range of 1 to 2].

Claim 24:

- each of the plurality of portions includes a planar surface parallel to a lower surface of the light directing device and connected to the lower surface by at least one side oriented substantially perpendicular to the lower surface.

Claims 25-27:

- the angle between the side surface and a line perpendicular to the planar surface is about between 0° and 10°(Fig. 10A, col. 15 lines 58-60).

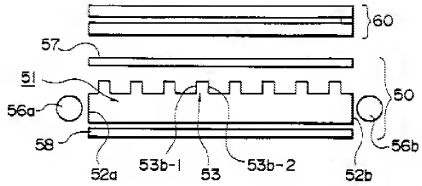
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. (US 6011602) in view Funamoto et al. (EP 08878720A).

FIG. 5



Miyashita et al. disclose a reflective liquid crystal display device comprising:

- a display panel 60 including two substrates spaced apart, liquid crystal sandwiched between the two substrates, and
- a reflector 58 to reflect light through the liquid crystal;
- an auxiliary light source device for supplying light to the display panel, including,
    - a light source 56a/b,
    - a light directing member 51 for directing incident light from the light source toward the display panel, the light directing member having
        - an upper surface and a lower surface parallel to each other,
        - the lower surface having a plurality of convex portions, each having a substantially planar surface which is substantially parallel to the lower surface and a side surface connecting the planar surface and the lower surface, a side surface angle between the side surface of the convex portion and a line perpendicular to the substantially planar surface being less than 5°, (Fig. 10A, col. 15 lines 58-60).

wherein

- the plurality of convex portions have the same side surface angle with each other,
- light reflected along an orthogonal direction to the display panel is uniform, and wherein a size of the plurality of convex portions increases with increasing distance from the light source; and
- a light reflecting member which guides light from the light source into the light directing member,

However, Miyashita et al. fail to disclose said display panel being between said auxiliary light source and said light reflecting member.

Funamoto et al. teach said display panel being between said auxiliary light source and said light reflecting member for high visibility both while illuminating and while not illuminating and reducing power consumption (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Miyashita et al. disclosed with said display panel being between said auxiliary light source and said light reflecting member for high visibility both while illuminating and while not illuminating and reducing power consumption (abstract) as Funamoto et al. taught.

2. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyashita et al. (US 6011602) in view Funamoto et al. (EP 08878720A).

Miyashita et al. fail to disclose the planar surface of each convex portion having a substantially circular shape.

Funamoto et al. teach (Figs. 6-7) the planar surface of each convex portion having a substantially circular shape for achieving more uniform illumination (page 8 line 19).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Miyashita et al. disclosed with the planar surface of each convex portion having a substantially circular shape for achieving more uniform illumination (page 8 line 19) as Funamoto et al. taught.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571)272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HOAN C NGUYEN/
Primary Examiner, Art Unit 2871